FULL AUTO Volume Seven



Semi-Auto Bingham AK-22 Medification Manual

FULL AUTO

Semi-Auto Bingham AK-22 Modification Manual

FULL AUTO



Semi-Auto Bingham AK-22 Modification Manual

FULL AUTO

Semi-Auto Bingham AK-22 Modification Manual

Table Of Contents

Historical Background				4					. 1
The Philosophy & Fact Of	Conversi	on	4	*	×	4	ł	*	13
Conversion: Step-By-Step				1				,	17
AK-47/AK-22 Comparative	Specific	cati	0	n	Ś				26

NOTICE

The modification of any firearm to fire fully automatic is illegal without prior approval of the BATF. Also, the manufacture of a part or group of parts that, when installed in a firearm makes it capable of automatic fire, is illegal without prior approval of the BATF.

Please be advised that the publication of this book is for academic purposes only. The publisher assumes no responsibility or liability for the improper or illegal modification of any firearm.

Historical Background

.22 rimfire "look alikes" are extremely popular, offering the appearance and basic handling characteristics of their more potent centerfire counterparts while retaining the low cost and reduced noise and recoil of rimfire shooting. The Colt Ace, .22 rimfire look alike of the famous Government Model, has recently been reintroduced and Smith & Wesson has several K frame .22 Long Rifle revolvers in its popular line. There are numerous rimfire (and centerfire) copies of the Colt Single Action Army which was itself produced in several rimfire calibers during the late 1800's. The Walther PP, PPK/s, and P-38 are available in .22 Long Rifle as well as centerfire calibers, to say nothing of Stoeger's .22 rimfire Luger.

A recent development in the .22 look alike trend is the copying of popular submachine guns and assault rifles in .22 rimfire semi-auto versions. Among the first were the Thompson and the M16, followed closely by Bingham's AK-22 copy

of the AK-47 and PPS/50 copy of the PPSh-41.

While there are at least three commercial centerfire semiauto versions of the AK on the market in standard military calibers (5.56x45mm NATO, 7.62x51mm NATO and 7.62x 39mm Soviet), the little AK-22 is the only civilian-legal version which is priced within reach of the average person. When coupled with the much lower cost of .22 rimfire ammo, the AK-22 could justifiably lay claim to being the "poor man's assault rifle", in the civilian context of the term. To qualify as a true assault rifle in the correct military context, a rifle must meet the following criteria which was established by the Germans for their Sturmgewehr, or "storm gun", in 1941 and which has remained the standard to this day:

- 1. Weapon must be a carbine, for handiness.
- 2. Weapon must be selective fire, in order to replace the submachine gun.
- 3. Weapon must fire from a locked breech.
- Weapon must utilize an intermediate-powered cartridge (a cartridge powered somewhere between a full-powered rifle cartridge and the low-powered pistol cartridge used in submachine guns).
- Must use a large capacity, detachable box magazine which allows the high volume of fire that is critical to the assault rifle concept.

Obviously, the AK-22 qualifies on only two points — it's a carbine and it has a large capacity box magazine. In a civilian context, semi-auto only weapons can be called assault rifles. However, that doesn't concern us here since we will be converting the AK-22 to selective fire anyway. The other two criteria, that the weapon must fire an intermediate-powered cartridge from a locked breech, can be dispensed with entirely since virtually all semi-auto .22 rimfires are of blowback design due to the low pressures involved. That gives us a new category of weapon — a rimfire assault rifle, which isn't nearly as ridiculous as it sounds. After all, a .22 rimfire that spews forth 1,000 rounds per minute can be pretty wicked at close range — the ranges for which assault rifles were basically designed in the first place.

To understand the concept of the assault rifle, one must first be aware of the facts surrounding its development and the purpose for which it was intended.

World War I was, in many ways, a stalemate war of "hurry up and wait". German and Allied troops would wait in the trenches for days on end before attempting an assault across No Man's Land to the enemy trenches on the other side. The M1903 Springfield, M98 Mauser and British SMLE bolt action battle rifles were well suited to trench warfare, in which soldiers fired at barely visible targets in enemy trenches or at enemy soldiers charging across the vast expanse of No Man's Land. These bolt actions were slow, but were very accurate at long range. Their heavy .30 caliber bullets were all proven manstoppers.

In the trenches themselves, however, the bolt action battle rifles were cumbersome and awkward to use effectively. Smaller, more maneuverable weapons were needed as "trench brooms", a phrase coined by General John T. Thompson when he was developing the submachine gun that was to bear his name. Pump action shotguns like the Winchester M97 were popular in the trenches, and during the closing months of the war certain German groups were armed with a terrifying new weapon — the submachine gun!

These SMG's were chambered for the 9mm Parabellum pistol round and could, of course, be fired in the full auto mode. Although the war ended before they had completely proven themselves in battle, their early performance was sufficient to make European arms designers sit up and take notice. As for General Thompson's SMG, there is an interesting story that a shipment of Thompsons arrived at New York Harbor en route to France on November 11, 1918 — the very day the armistice was signed. Whether the story is true or

not, the fact remains that SMG development stagnated in the U.S. following the war while it flourished in Europe, especially in "disarmed" Germany,

The Spanish Civil War provided a vast proving ground for aircraft, arms, men and tactics as war clouds began gathering over Europe in the mid-1930's. Both Germany and the Soviet Union had men and materiel in Spain, and both sides were quick to learn the lessons of changing methods of warfare.

Oddly enough, although many European arms manufacturers were active in SMG development during the period between the two World Wars, very little happened in the way of battle rifle design. Virtually every participant in World War II, with the exception of the U.S., went to war with a bolt action rifle that was little changed, if any, from the great conflict of twenty-odd years earlier. The U.S., by contrast, had adopted the M1 Garand autoloading rifle in 1936.

After Hitler began fighting a war on two fronts in June 1941, the Germans became painfully aware of just how effective the SMG could be in combat. Soviet troops armed with SMG's proved a formidable enemy with their spray fire tactics.

The Germans fully understood the desirability of having a hand-held automatic weapon in addition to the traditional bolt action Mauser, but they were also well aware of the problems of trying to supply spare parts and ammo of additional types to the front. History doesn't tell us who first conceived of the idea of coming up with a compromise weapon that would replace both the antiquated Mauser and the submachine gun, but we do know that Hitler was opposed to the idea from the start. However, Reichsminister of Armaments Albert Speer supported research work on an assault rifle in defiance of Hitler. He was able to keep the

project funded by convincing Hitler that the money and effort were being expended on developing a new machine

pistol.

The end result of this "machine pistol" research was the MP-43, a selective fire carbine chambered for the 7.92mm Kurz (short). This round was less powerful than the standard Mauser ammo, but was still effective at ranges where the 9mm SMG round was sadly lacking. The vast majority of the MP-43's produced (along with the succeeding, slightly modified MP-44) were shipped to the Eastern Front, where they acquitted themselves admirably at Stalingrad, to name just one success.

The MP-44 was rechristened the StG-44. As the tides of war turned against Germany, advancing Russian troops captured the facility where the assault rifles were made. Their booty included several prototype designs as well as the personnel who were working on the project. All were packed up and sent off to Mother Russia.

Duly impressed with both the concept and reality of assault rifles, the Soviet Union began an assault rifle development program of its own. In addition to the criteria listed earlier, the Soviets added a few standards of their own, all of which show sound judgment and a knowledge of realistic wartime expedients:

- 1. Simplicity.
- 2. Ease of manufacture.
- 3. Reliability.
- 4. Firepower.
- Ease of use and maintenance by semi-literate or illiterate troops.

The first Soviet weapon to fulfill these criteria was the Simonov SKS carbine, which was chambered for the new 7.62x39mm cartridge. Of semi-automatic design, hence not a true assault rifle, the Simonov entered service in 1946, but was soon to be replaced by a different, vastly superior design which has been the world standard for judging assault rifles ever since.

That new weapon was the Automat Kalashnikova, better known as the AK-47. It was the brainchild of former Tank Corps Sgt. Mikhail T. Kalashnikov. Needless to say, Kalashnikov is no longer a sergeant, but one of the most honored men in the USSR. As nearly as can be determined, over 30 million AK-47's and variations thereof have been made in the Soviet Union and its satellites.

Like the Simonov, the AK was chambered for the 7.62x 39mm round. Although some power is sacrificed when an assault rifle cartridge is selected over a battle rifle cartridge, there are also some bonuses to be gained. Since the round is both smaller and lighter, it is easier to store and ship and a soldier can carry more rounds in a given space. He will also experience less recoil when firing the rifle and will not become as easily fatigued from carrying the smaller, lighter rifle itself.

The fact that the selector switch on the AK goes from safe to auto, then to semi-auto says something about Soviet thinking and their grasp of the assault rifle concept. The word "assault" means exactly what it says. The little rifles are equipped with large box magazines and selective fire so troops can keep a steady stream of fire pouring into an enemy fortification or position as they advance on it. Once they are close enough for the final assault, with its close



Soviet AK-47.

range fighting, the little assault rifle can be fired from the underarm assault position, just like an SMG.

The AK-47 began appearing in the Soviet Army between 1949 and 1951. In 1959 Kalashnikov redesigned it into the AKM, which first entered service in 1967. The main differences are that the AKM has a stamped, rather than milled, receiver, a ribbed receiver cover and fluted gas cylinder tube, a redesigned buttstock which represents some attempt at human engineering (although it's still too short), a rear sight graduated to 1,000 rather than 800 meters, an improved fore end and an adjustable cyclic rate of fire. The latter is a mystery from a practical standpoint, as the AKM fires full auto at approximately the same rate as the original AK-47.



Soviet AK-47 with folding stock.



Rumanian AK-47. Note pistol grip below fore end.

Like its predecessor, the AKM has no bolt stop, a serious fault on a fighting rifle. AK's produced in Yugoslavia do, however, have a bolt stop, so Yugoslavian magazines are not interchangeable with those of other countries.

American troops first became familiar with the AK in the hands of enemy troops in Vietnam as large quantities of that weapon were supplied to the Viet Cong. Experience showed that the AK's 7.62mm bullet was far more effective than the 5.56mm bullet of the American M16, which replaced the M14 and its 7.62x51mm NATO round. The AK consistently produced better penetration and more serious wounds than did the M16.

Arms students will probably recall the Stoner system, a group of weapons based on a single receiver design, that was the pride and joy of McNamara's "think tank" military philosophy of the early 1960's. While ideal in theory, the Stoner system never really got off the ground for the simple reason that it was too much of a compromise. The basic action was supposedly adaptable to everything from an assault rifle to a light machine gun. In reality, it wasn't particularly well suited for any of the arms for which it was intended. The only Stoner design to see extensive service was the M16,

an adaptation of his original Armalite AR-15. The failings of the early M16 are known to all, and they appear to have been the result of Ordnance changes prior to adoption rather than any fault of Stoner's original design.

Unlike the Stoner system, the AK is a part of a system that actually works, and works quite well. With only minor modification, the basic AK action has been adapted to the RPK light machine gun, PKS general purpose machine gun and the tank-mounted MG, to name just a few.

In recent years, the Soviets have again modified the basic AK design into the AK-74, which was first issued in 1975, and then only to elite units. Indeed, the actual existence of the AK-74 wasn't confirmed for the West until some were captured in Afghanistan in the early 1980's.

The AK-74 is chambered for a new 5.45x39mm round of extremely high velocity. Casualty reports from Afghanistan indicate that few who are hit by the round survive, mainly due to the lack of medical facilities for the Afghans in the fighting zone. In one reported case, an Afghan rebel was hit in the upper arm and the bone was splintered from the elbow to the shoulder. Such wounds would tend to support the theory that small, light bullets traveling at high velocity pro-



Hungarian AKM,

duce more serious wounds than the larger, slower .30 caliber bullets of yore. Yet the .30 caliber AK bullet of the Victnam era was more effective than the 5.56x45mm NATO round. An anomally to be sure, but one that simply emphasizes that we don't yet know all the answers regarding ballistics and wounds. Obviously, bullet design plays a large part in the matter, and the Soviets have done their homework in that department, as evidenced by the success of both AK rounds.

The AK-74 action is scaled down somewhat to accommodate the new round, and it is the first AK to be equipped with a muzzle brake. While the muzzle brake reduces muzzle blast, it actually increases muzzle flash. A commercial version of the AK-74 muzzle brake has been produced and marketed in the U.S. With a bolt to bolt carrier weight ratio of 6:1, the AK-74 is about as reliable in function as a rifle can be, since a ratio of 3:1 is considered quite good.

The superiority of the basic AK design is evidenced by the fact that it has been copied widely in the Free World as well as behind the Iron Curtain. The Swedish Valmet is an improved AK which is commercially available in both 7.62x 39mm Soviet and 5.56x45mm NATO calibers. Several design changes were made to improve the rifle, but it's still a Kalashnikov, any way you look at it. The Israeli Galil is an even better Kalashnikov copy, with additional improvements. It has the best night sights of any assault rifle in the world, and has a select lever on the left-hand side of the receiver as well as the traditional AK select lever on the right. The Galil is available in 7.62 NATO as well as .223, so this particular AK variant also qualifies as a battle rifle. A semi-auto only AKM is produced in Egypt for export to the U.S. and other Free World countries. This particular rifle is pure Kalashnikov,

even down to being manufactured on Russian machinery which Egypt acquired in its pre-Sadat, pro-Soviet days. A licensed version of the Galil, the R4, is also produced in South Africa. Bingham's AK-22 is produced in Italy and may well become the most prolific of the commercial AK copies since its low price brings it within the reach of almost averyone.

In this day of technological warfare, when virtually every new weapon is obsolete before it reaches the production stage, the Kalashnikov AK series is a marked contrast. Although the design has been improved upon and an entirely new cartridge has been introduced for it, the fact remains that the world's most prolific military rifle is still basically the same as it was when first issued nearly 40 years ago. Few military shoulder weapons of the 20th Century have had such a long service life as a primary weapon. The M1 Garand was retired when it was only a little over 20 years old and the M14 after only about 10 years of service. The M16 has been standard issue to all services for a little less than 20 years and there is already talk of replacing it. Most NATO countries are phasing out their .30 caliber battle rifles and are adopting a 5.56x45mm assault rifle. Clearly, the day of the battle rifle is on the want as the assault rifle finally comes into its own worldwide.

No matter what rifles the NATO countries may adopt in the future, there can be little doubt that in the event of a war, the troops carrying them will be facing AK's. The Kalashnikov design is extremely reliable under any conditions, as evidenced by Israeli troops' actions in the Six Day War of 1967. As many of them as could armed themselves with AK-47's taken from the fallen enemy, shouting, "This is the gun! This is the Tiger Of The Desert!" The great Russian Bear produced a tiger of a fighting rifle nearly 40 years ago, a tiger which may very well be still snarling in battle when we enter the 21st Century. For no matter what technological advances are made, the ubiquitous infantryman and mobile, hit and run guerrilla will undoubtedly remain important tools of war, tools with rifles in their hands. As you handle your AK-22, remember that it is more than just a .22 rimfire rifle. It is a part of a piece of history, just one of the many descendants of a great fighting rifle — the Kalashnikov AK.



Mikhail T. Kalashnikov

The Philosophy & Fact Of Conversion

The first step in converting any semi-automatic weapon to full automatic or selective fire is to determine if the design was ever available in a full auto or selective fire version. The Thompson, Uzi, Mini-14 and Ingram M10 are examples of selective fire weapons which were later produced in semi-auto only versions for the civilian market.

If the semi-auto weapon which is to be converted to full auto or selective fire was originally available in that mode, the next step is to determine what changes were made in the design to prevent it from easily being converted to selective fire or going full auto due to parts wear or a pin falling out, etc. The BATF has rather stringent requirements to ensure that conversion to selective fire will not be an easy task.

Although the original AK-47 was a selective fire weapon, studying an example of it doesn't help us all that much when it comes to converting the AK-22 since the two weapons are quite different internally. For instance, the gas tube above the barrel on the original is functional while that of the AK-22 is strictly for appearance's sake since the action is a straight blowback type. Also, the bolts of the two differ quite a bit. For this reason, we have to place the AK-22 in the class of semi-automatic weapons which were designed

AK-22

AK-22 PARTS LIST

- I. Butt plate screw
- 2. **Butt plate**
- 3. Stock
- 4. Grip screw
- 5. Washer
- 6. Rear link screws
- Recoil spring support
- 8. Limiting device
- Recoil spring stop ring
- 10. Hammer spring hand guard holding pin
- 11. Hammer spring hand guard
- 12. Cover screws for holes in rifle scope base
- 13. Recoil spring guide
- 14. Recoil spring
- 15. Upper cover
- 16. Bolt
- 17. Recoil spring guide bushing
- 18. Extractor
- 19. Extractor pin
- 20. Extractor spring
- 21. Cocking lever
- 22. Cocking lever catch pin
- 23. Firing pin spring
- 24. Striker
- 25. Striker pin
- 26. Back sight
- 27. Back sight adjusting screws
- 28, Slider
- 29. Rear sight
- 30. Rear sight pin
- 31. Rear sight spring
- 32, 34. Upper hand guard catch
- 33. Hand guard catch ring
- 34,36, 37. Upper hand guard
- 38. Upper hand guard spring
- 39, 40, 41. Upper hand guard support ramp and hood
- 42. Front sight ramp and wings
- 43. Front sight
- 44. Front sight stop screw
- 45. Front sight ramp stop screws
- 46. Barrel cap
- 47. Front sight ramp and hood pin
- 48. Barrel
- 49. Cleaning rod
- 50. Lower hand guard support

- 51. Lower hand guard
- 52. Cleaning rod spring
- 53. Barrel catch screws
- 54. Cover catch pin 55. Frame
- 56. Frame cover catch screw
- 57. Magazine catch
- 58 Magazine catch spring
- 59 Magazine catch pin
- 60 Ejector
- 61 Ejector spring
- 62 Ejector pin
- 63. Sear spring
- 64. Sear
- 65. Sear pin
- 66. Sear spacer
- 67. Trigger guard pin
- 68. Hammer
- 69, Hammer pin
- 70. Hammer spring
- 71. Sear lover
- 72. Sear lever pin
- 73. Trigger
- 74. Trigger pin
- 75, 77. Safety
- 76 Safety holding ring
- 78. Safety screw
- 79. Grip
- 80. Trigger spring
- 81. Trigger spring pin
- 82. Frame cover
- 83. Trigger guard
- 84. Rear link
- B5, Magazine (otlower
- 86. Long magazine box
- 87. Long magazine spring
- 88. Magazine spring guide pin
- 89. Short magazine base
- 90. Short magazine box
- 91. Short magazine spring
- 92. Stock setscrew wrench
- 93. Front sight adjusting tool
- 94. Front sight clamping setscrew wrench
- 95 Sling
- 96. Sling buckle
- 97. AK long magazine
- 98. AK long magazine base

solely for use in that mode and which may or may not be easily converted to selective fire.

In theory, virtually any semi-automatic weapon can be converted to selective fire or full auto, but the fact of the matter is something else again. You have undoubtedly heard more than one armchair expert say, "It's easy to convert a semi-auto to full auto, just file down the sear!" Anyone who espouses such a theory has obviously never tried it! There are some semi-autos which are capable of a "clean" conversion. In other words, you don't need a degree in mechanical engineering or a full machine shop to do the conversion. But there are also a number of semi-auto designs on the market, particularly among rimfires, which defy conversion almost to the point of impossibility. On some of these designs, new parts must be manufactured or original parts altered so drastically as to be beyond the scope of even the most advanced home workshop. Of course, most of these parts can easily be made at a machine shop - provided you are willing to pay the price! The cost of tooling up to make just one each of three or four small parts could well exceed the price originally paid for the entire gun!

Fortunately, the AK-22 falls within the "clean" category and the conversion can be done in a short time by anyone who has a reasonable amount of skill with his hands and who owns or can borrow a few simple tools. Only two parts of the AK-22 need to be altered, with a third alteration desirable but not necessary. Although a bench grinder and a drill press would make conversion easier, the entire job can be done with nothing more than an electric hand drill and a file. And best of all, it takes only a short time to complete the task.

Conversion: Step-By-Step

While there is one method of converting the AK-22 to selective fire, there are two ways to accomplish the task. The quickest and perhaps the easiest is as follows:

Remove the upper receiver cover (15) by lifting it upward while, at the same time, depressing the recoil spring support (7) which also doubles as the cover latch. This exposes the recoil spring which can now be removed by moving the limiting device (8) gently forward. Now remove the recoil spring support, noting how it attaches to the rear link screws (6).

The bolt can now be removed by sliding it to the rear, past the guide grooves in the receiver, and lifting it out.

We have now exposed the two areas where a slight alteration is necessary, namely the sear lever (71) and the bolt (16).

Since the bolt has been removed from the weapon, it can be worked on quite readily. The only alteration to the bolt that is necessary is to file or grind the sharp radius on the rear of the bolt to approximately a 1/8" radius as shown in Figure 1 and in the accompanying photo.

Although the bolt can be removed from the receiver quite easily as described above, the sear lever is another matter altogether and it's probably best to leave it inside the gun when working on it.

Begin by sticking some oil-soaked tissue inside the receiver, below the sear lever. This will help catch the grinding

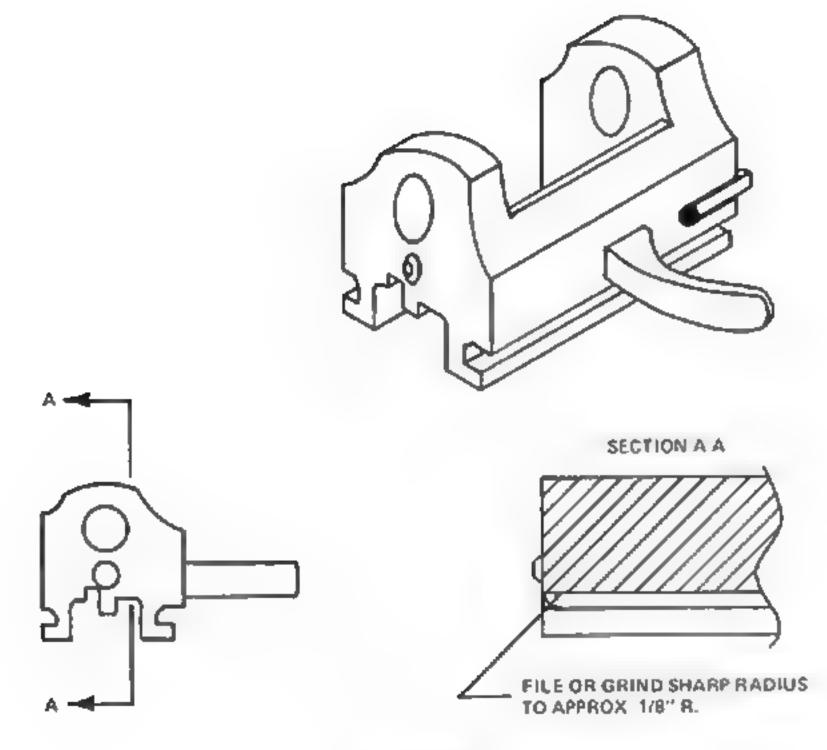


FIGURE 1



Arrow indicates area at rear of bolt immediately below the firing pin (bolt is shown upside down) which should have the radius enlarged as per Figure 1.

residue, which should not be allowed to come in contact with any pivot points or areas of wear. If it does, and is not removed, it will act as an abrasive and cause unnecessary wear and tear on the moving parts, to the detriment of weapon reliability and functioning.

Once all moving parts around and beneath the sear lever have been protected, begin by grinding a small radius in the sear lever at the point indicated in Figure 2 and on the accom-



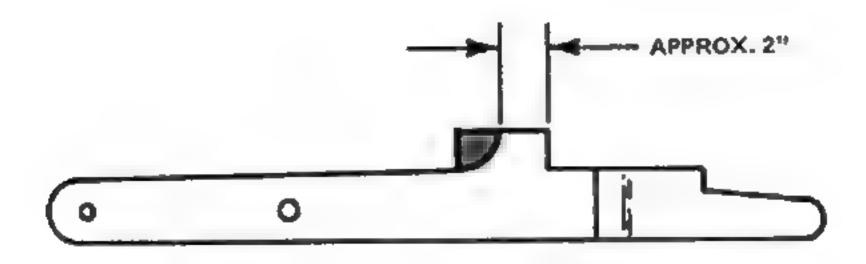
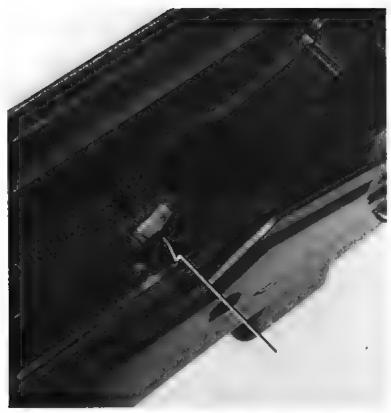


FIGURE 2
Remove shaded area from sear lever.



Bright area on sear lever (arrow) has been ground down to prevent lever from engaging hammer when weapon is set for the full auto mode.

panying photo. You don't need to remove much metal, just enough to prevent the sear lever from engaging the hammer when the select lever is set for the full auto mode (Figure 3).

Reassemble the gun and check the mating of the hammer and sear lever from time to time. To do this, move the select

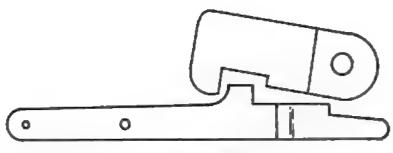


FIGURE 3

lever down past the semi-auto detent (the one on the bottom). Although it is not really necessary to drill an additional detent for the full auto position, you may wish to do so. Drill a .125" diameter hole .032" deep, spacing it the same distance from the second detent that it is from the first (Figure 4) and along the same arc of the select lever. This arc can easily be determined by moving the select lever downward from the semi-auto position, then back upward a few times. The dimple on the bottom of the select lever will scribe a light line along the side of the receiver. When drilling the detent for the full auto position, drill only through the sheet metal outer wall, leaving the inner receiver wall untouched.

With the gun reassembled and the select lever set for full auto, insert a loaded magazine and chamber a round. Aim the rifle at the target and pull the trigger. The first few times you do this the rifle will probably still function only as a semi-auto, indicating that the sear lever requires further filing or grinding. However, once you achieve consistent burst fire with a single pull of the trigger, DO NOT remove any more metal from the sear lever. You want to remove just enough to allow reliable automatic functioning, no more.

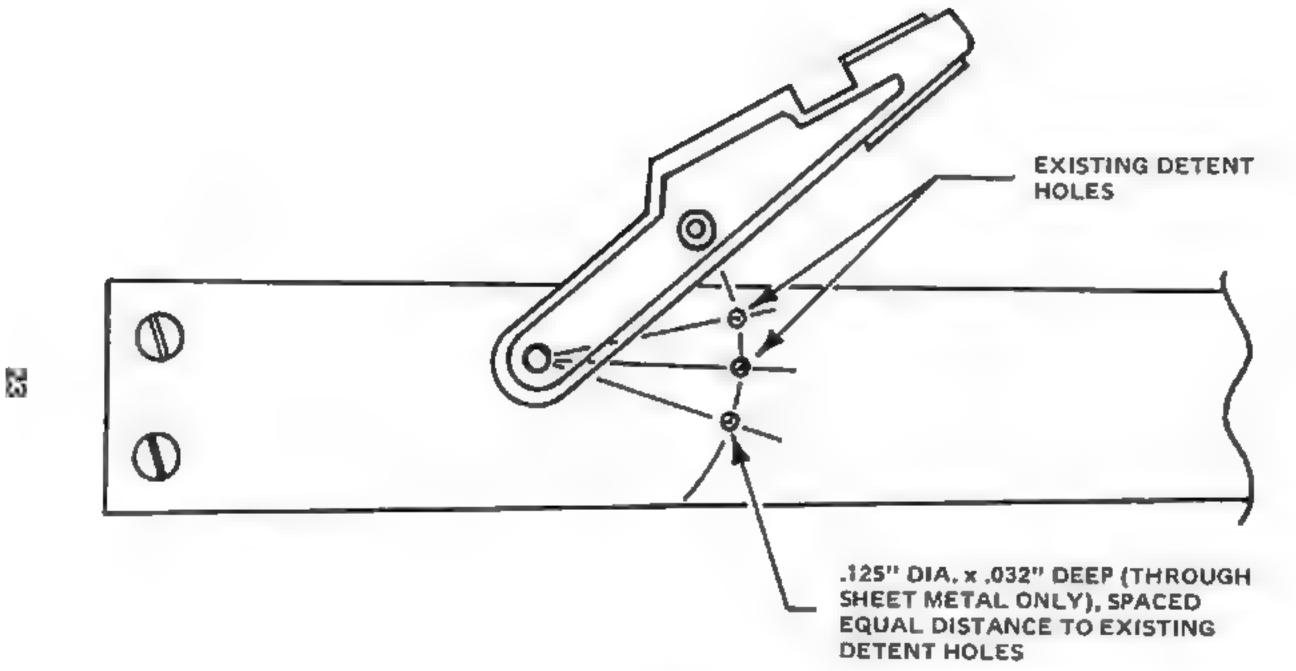


FIGURE 4



From top to bottom: AK-22 select lever in safe, semi-auto and full auto positions, respectively. Please note that on an original Soviet AK, the positions would be safe, full auto and semi-auto in that order.

After the conversion is completed, you may wish to cold blue the bare metal areas on the bolt, sear lever and outer receiver where the full auto detent has been drilled. This not only helps to preserve the AK-22's original appearance, but is also an aid to prevent rust and corrosion.

The second, and more difficult, way of converting the AK-22 to selective fire involves exactly the same filing or grinding operations as the first, but requires removing the sear lever from the receiver. While this procedure makes working on that part much simpler, the disassembly and reassembly are both complicated and time consuming to the point where this method is hardly worth considering.

One final detail should be stressed. Those who are familiar with the original Soviet AK series of rifles will already be aware of one significant difference between the centerfire version and the Bingham AK-22. On the original AK's the uppermost position of the select lever is SAFE, the second is FULL AUTO and the third is SEMI-AUTO. On our conversion, the positions from top to bottom are: SAFE, SEMI-AUTO and FULL AUTO in that order. Remember these differences, lest you some day have an opportunity to fire one of the Iron Curtain AK's and inadvertently put the select lever in the full auto position and then try to fire a single shot.

		_	
1	٩	a	ŀ
3	2	Ė	ľ
4	ū	1	١

(Includes all Commun Czech Vz-58 as well as and South African R-4. chambered for the 5	AK-22	
Caliber	7.62x39mm Soviet	.22 Long Rifle
Operation	Gas (rotating bolt)	Blowback type
Barrel Length	16.34"	17.75"
Overall Length	34.35"	35.5"
Weight	10.58 lbs.	6.06 lbs.
Magazine Capacity	30 rounds	15 rounds standard 28 rounds optional